

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. *(previously presented)* A pressure gauge, comprising:
 - a diaphragm having a displaceable semi-elastic inner portion, wherein the inner portion displaces in response to a pressure difference between first and second sides of the diaphragm;
 - a light transmitting source;
 - a light receiver, wherein the light transmitting source splits a light into a first light transmitted directly to the light receiver and into a second light transmitted to the first side of the diaphragm that is reflected to the light receiver;
 - and
 - a monitor and control system coupled to the light transmitting source and light receiver and adapted to determine the pressure difference from the displacement of the diaphragm.
2. *(cancelled).*
3. *(previously presented)* The pressure gauge according to claim 1, further comprising an optically reflective coating on a first side of the diaphragm inner portion.
4. *(cancelled).*
5. *(cancelled).*
6. *(currently amended)* The pressure gauge according to claim 1,
 - wherein the monitor and control system calculates the displacement of the diaphragm from an interference pattern generated from the first and second lights.

7. *(previously presented)* The pressure gauge according to claim 1, wherein the light transmitting source comprises a transmitting fiber having an output coupled to a diffraction device that separates a source light into the first and second lights, wherein changes in the diaphragm displacement cause the interference pattern to include intensity modulated light, wherein the monitor and control system calculates the diaphragm displacement from the intensity modulated light.
8. *(previously presented)* A pressure gauge, comprising:
 - a diaphragm having a displaceable semi-elastic inner portion, wherein the inner portion displaces in response to a pressure difference between first and second sides of the diaphragm;
 - a first light transmitting source outputting a first light at a first wavelength toward the first surface of the diaphragm;
 - a second light emitting source outputting a second light at a second wavelength toward the first surface of the diaphragm, wherein the second wavelength is phase shifted relative to the first wavelength;
 - a light receiver that receives the first light and second light;
 - and
 - a monitor and control system coupled to the first light transmitting source, the second light transmitting source and the light receiver, wherein changes in the diaphragm displacement cause the interference pattern to change with a substantially constant speed, wherein the monitor and control system comprises a counter that decodes the diaphragm displacement from the substantially constant speed.
9. *(cancelled)*.
10. *(previously presented)* A proximity sensor for lithography, comprising:
 - a measurement leg having a measurement probe coupled thereto, the measurement probe located proximate to a lithographic measurement surface;
 - a reference leg having a reference probe coupled thereto, the reference probe located proximate to a lithographic reference surface;

a bridge portion coupled between the measurement leg and the reference leg; and

a diaphragm pressure sensor disposed within the bridge portion, wherein the diaphragm pressure sensor detects changes in pressure in the measurement leg caused by a change in distance between the measurement probe and a lithographic measurement surface as compared to a distance between the reference probe and the lithographic reference surface, wherein the diaphragm pressure sensor comprises:

a diaphragm having a displaceable semi-elastic inner portion, wherein the inner portion displaces in response to a pressure difference between first and second sides of the diaphragm;

a light transmitting source;

a light receiver, wherein the light transmitting source splits a light into a first light transmitted directly to the light receiver and into a second light transmitted to the first side of the diaphragm that is reflected to the light receiver;

and

a monitor and control system coupled to the light transmitting source and light receiver and adapted to determine the pressure difference from the displacement of the diaphragm.

11. *(cancelled).*

12. *(cancelled).*

13. *(cancelled).*

14. *(previously presented)* The pressure gauge according to claim 1, wherein the semi-elastic inner portion comprises a polyimide film.

15. *(previously presented)* The pressure gauge according to claim 1, wherein the semi-elastic inner portion comprises a thin polyester film.

Reply to Office Action of January 24, 2007

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Appl. No. 10/812,098

16. *(currently amended)* The pressure gauge according to claim 1, wherein the semi-elastic inner portion comprises rubber.